



<b>Experiment title:</b> Compton Scattering Induced He-Double Ionization by High Energy Photons	<b>Experiment, number:</b> MI-82	
<b>Beamline:</b> ID15: BL25	<b>Date of Experiment:</b> from: 6.12.95 to: 17.12.95	<b>Date of Report:</b> 27.8.96
<b>Shifts:</b> 30	<b>Local contact(s):</b> Th. Tschentscher, Th. Buslaps	<i>Received at ESRF:</i> <b>17 FEB 1997</b>

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**Report:**

The results of the experiment are published in:

*Physical Review Letters* 76, 4685 (1996)

**Double and Single Ionization of Helium by 58-keV X-rays**

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**Abstract:**

We have measured the ratio of cross sections for double to single ionization of helium by Compton scattering,  $R_C = \sigma_C^{++}/\sigma_C^+$ , at a photon energy of 58 keV using Cold Target Recoil Ion Momentum Spectroscopy. We find a value  $R_C = (0.84_{-0.11}^{+0.08})\%$  that is in agreement with the asymptotic limits predicted by Andersson and Burgdörfer (Phys. Rev. A 50, R2810 (1994)) and Surić *et al.* (Phys. Rev. Lett. 73, 790 (1994)).